Audit Report

DEFENSE CONTRACTOR AND VENDOR PAY
YEAR 2000 END-TO-END TESTING

Report No. 99-246 September 3, 1999

Office of the Inspector General
Department of Defense

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Acronyms

CAPS	Computerized Accounts Payable System
DFAS	Defense Finance and Accounting Service
DISA	Defense Information Systems Agency
IAPS	Integrated Accounts Payable System
OIG	Office of the Inspector General
STARS-OP	Standard Accounting and Reporting System - One Pay
Y2K	Year 2000

INSPECTOR GENERAL
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September 3, 1999

MEMORANDUM FOR DIRECTOR, DEFENSE FINANCE AND ACCOUNTING SERVICE

SUBJECT: Audit Report on Defense Contractor and Vendor Pay Year 2000 End-to-End Testing (Report No. 99-246)

We are providing this report for information and use. This report is one in a series of reports that the Inspector General, DoD, is issuing in accordance with an informal partnership with the DoD Chief Information Officer to monitor the Defense Finance and Accounting Service efforts in addressing the year 2000 computing challenge. We considered management comments on a draft of this report when preparing the final report.

Comments on the draft of this report conformed to the requirements of DoD Directive 7650.3 and left no unresolved issues; therefore, no additional comments are required.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Ms. Kimberley A. Caprio at (703) 604-9139 (DSN 664-9139) (kcaprio@dodig.osd.mil), Mr. Michael Perkins at (703) 604-9152 (DSN 664-9152) (mperkins@dodig.osd.mil), or Ms. Suzette L. Luecke at (703) 604-9142 (DSN 664-9142) (sluecke@dodig.osd.mil). See Appendix D for the report distribution. The audit team members are listed inside the back cover.

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Office of the Inspector General, DoD

Report No. 99-246 **September 3, 1999**
(Project No. 9FG-9027)

Defense Contractor and Vendor Pay Year 2000 End-to-End Testing

Executive Summary

Introduction. This report is one in a series of reports that the Inspector General, DoD, is issuing in accordance with an informal partnership with the DoD Chief Information Officer to monitor DoD efforts in addressing the year 2000 computer challenge. For a listing of audit projects addressing the issue, see the year 2000 webpage on the IGnet at http://www.ignet.gov.

The Defense Finance and Accounting Service pays approximately 1.2 million invoices each month to DoD contractors and vendors for supplies and services. The payment process begins with the initial request for goods or services that require a contract to be initiated. Once a contract has been established and the goods and services received, the contractor or vendor sends an invoice to Defense Finance and Accounting Service for payment. The invoice is processed through an "entitlement" system (contractor and vendor pay systems) that authorizes invoices for payment. The information is then sent to the disbursing system for actual payment to the contractor or vendor. The Defense Finance and Accounting Service planning phase for the contractor and vendor pay year 2000 end-to-end testing was performed from March 16, 1999, through June 30, 1999. The purpose of end-to-end testing is to verify that the set of interrelated systems supporting an organizational function such as contractor and vendor pay operates as intended. Actual testing began June 28, 1999, and is expected to be finished by September 3, 1999.

Objective. The overall audit objective was to evaluate the effectiveness of the planned end-to-end testing in the Defense contractor and vendor pay area. This report addresses plans for conducting year 2000 end-to-end testing for Defense contractor and vendor pay.

Results. When initially audited, the Defense Finance and Accounting Service event and test plans for the end-to-end testing of the contractor and vendor pay functional processes needed improvement. The plans lacked verified assumptions; documented and explained constraints; requirements for data collection and data analysis; and clearly defined test environments, test scenarios, exit criteria, baselines, and roles and responsibilities. The Defense Finance and Accounting Service has taken action to address those concerns and made improvements to the process. For details of the audit results, see the Finding section of the report.

Summary of Recommendations. We recommended that the Director, Defense Finance and Accounting Service implement verified assumptions, explained and documented test constraints, a clearly defined and documented test environment and associated risks, documented test scenarios and exit criteria, a documented data collection and analysis plan, baseline for the Computerized Accounts Payable System,

and ensure that the Defense Finance and Accounting Service Year 2000 End-to-End Project Office oversees compliance with the Defense Finance and Accounting Service Master Plan.

Management Comments. Management concurred with the recommendations in the draft report and took responsive action. The Defense Finance and Accounting Service, Director for Information and Technology stated that the Joint Interoperability Test Command conducted site assistance visits to all Defense Finance and Accounting Service Centers that have responsibility for defense contractor and vendor pay. The Defense Finance and Accounting Service will ensure that where planning documentation was lacking that followup documentation will include a better record and explanation of the assumptions and constraints and include the data collection and analysis methodology. The Joint Interoperability Test Command assisted in the development and documentation of test environments, test scenarios, and exit criteria. The Computerized Accounts Payable System thread leader has documented the baseline for the end-to-end test. The Defense Finance and Accounting Service Year 2000 End-to-End Project Manager holds periodic in-progress reviews to assess the progress and compliance and the Joint Interoperability Test Command also conducts site visits on a routine basis to ensure progress and compliance. See the finding for a discussion of management comments and the Management Comments section for the complete text of the management comments.

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Background

Addressing the Year 2000 Computing Challenge. This is one in a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor efforts to address the year 2000 (Y2K) computing challenge. For a listing of audit projects addressing the issue, see the Y2K webpage at www.ignet.gov.

The Defense Finance and Accounting Service (DFAS) is the principal agency responsible for DoD accounting and finance processes. DFAS is also responsible for disbursing payments by U. S. Treasury check, by cash, or by electronically transferring funds. In FY 1998, DFAS processed a monthly average of 9.8 million payments to DoD personnel, 1.2 million commercial invoices; 600,000 travel vouchers or settlements; 500,000 savings bonds; and 120,000 transportation bills of lading. The agency's monthly disbursements totaled approximately $24 billion.

For Y2K purposes, DFAS has identified 45[1] systems as "mission critical." For purposes of testing mission critical systems for Y2K compliance, DFAS has identified its business processes considered critical and developed plans to test those business processes. Critical processes are defined as those that, if not performed, would preclude or immediately impair the disbursal, pay, and accounting functions. Specifically, DFAS identified the following seven critical business processes: disbursing; military, retiree, and annuitant pay; civilian pay; contractor and vendor pay; transportation pay; travel pay; and accounting.

End-to-End Testing. The "end-to-end" process is the flow of data through a set of interconnected systems that performs a core business process, function, or mission. Data flow begins with the initial input of data into the first system and ends with the final receipt of data in the last system and receipt of output by the user. The purpose of Y2K end-to-end testing is to verify that the set of interrelated systems supporting DFAS business processes, such as DoD civilian payroll or payments to contractors and vendors, operates and appropriately processes Y2K related data.

DFAS End-to-End Testing. DFAS has organized its end-to-end testing into seven testing "events," one for each critical mission or business process. DFAS has further divided each event or business process into "threads." Each event can contain one or more "threads" that track to a critical business process. A thread is a system or set of systems that performs the functions within the business process. Threads may span systems, DFAS organizations, and external interfaces. Contractor and vendor pay is divided into three threads: the Computerized Accounts Payable Systems (CAPS) for Army entitlements, the

[1]We identified 42 DFAS mission critical systems in previous audit reports. DFAS recently added three systems to its mission critical list: the Standard Accounting and Reporting System - One Pay, the Standard Army Financial Inventory Accounting and Reporting System, and the Standard Base Supply System.

Integrated Accounts Payable Systems (IAPS) for Air Force entitlements, and the Standard Accounting and Reporting System-One Pay (STARS-OP) for Navy entitlements.

DoD Y2K Management Plan. The "DoD Year 2000 Management Plan," version 2.0, December 1998, (the DoD Plan) defines the DoD Y2K management strategy, including planning and executing end-to-end testing. Appendix I, "Guidelines to Support DoD Y2K Operational Readiness," of the DoD Plan, provides guidance on planning, executing, and evaluating activities required to assess Y2K readiness. These activities include functional area end-to-end tests. Appendix I identifies roles and responsibilities, as well as defines requirements for developing end-to-end master plans, event plans, reporting, risk assessment, data collection and data analysis, execution, and management controls.

DFAS Y2K End-to-End Master Plan. DFAS issued the "DFAS Y2K End-to-End Master Plan," revision 2.3, on June 21, 1999, (the Master Plan) specifically for accomplishing Y2K-related end-to-end testing of its mission-critical business processes. The Master Plan identifies roles and responsibilities; assumptions and constraints related to testing; interfaces with non-DFAS organizations; and requirements for planning, testing, and reporting on test results.

Roles and Responsibilities. DFAS designated a Y2K project manager and functional proponent at DFAS headquarters with overall Y2K testing responsibility. DFAS delegated the responsibility to its functional proponents for assigning event leaders and thread leaders to execute the end-to-end testing. Also, DFAS has assigned roles and responsibilities to system managers for controlling their segment of the end-to-end testing process.

Assumptions and Constraints. Because of limited time and resources, the Master Plan acknowledged constraints and identified assumptions related to Y2K end-to-end testing. These included for example, the assumption that third-party software and computing platforms are Y2K compliant; that operations and compliance testing takes precedence over end-to-end testing; that partner organizations will conduct their own internal end-to-end tests and provide input for DFAS; and that all mission critical systems will have contingency plans in place.

Interface Requirements. The Master Plan states that each test event will include critical automated interfaces with other Departments and agencies. However, because of sizing limitations within the DoD Megacenters that support testing, DFAS and the other DoD organizations may not be able to run true end-to-end tests simultaneously. Rather, each organization will maintain sufficient control of their segment of the end-to-end testing process to ensure the integrity of the data flow from one system to the other.

Planning, Testing, and Reporting. The Master Plan specified requirements for the following:

- **Live versus Simulation.** DFAS plans to test its business processes under normal operating conditions when possible. Otherwise, DFAS will use a "time machine" or simulated operating environment and document the reasons and the associated risks.[2]

- **Critical Dates.** Although the Master Plan did not designate specific dates for testing, it did recommend that testing cover the following five time periods: the fiscal year 2000 crossover, calendar year 2000 crossover, fiscal year 2001 crossover, calendar year 2001 crossover, and leap year (February 29, 2000). DFAS recommended that whatever dates they test be consistent with dates being tested by interfacing systems.

- **Baselines.** After testing the dates, DFAS organizations should compare their test results to outcomes previously determined as the baseline. (The baseline is the set of known end-to-end test inputs and outputs extracted from systems that have been certified as Y2K compliant). Each DFAS organization will document the discrepancies between each of the tests and the baseline.

- **Data Analysis and Documentation.** The Master Plan requires that each DFAS organization develop and document in their test plan, a data collection and analysis strategy that provides sufficient information to support end-to-end test design, results and analysis. The Master Plan leaves the details for data analysis or documentation to the organizations responsible for testing.

Preliminary Assessment. On May 28, 1999, the Office of the Inspector General (OIG), DoD, provided DFAS with preliminary audit results in a memorandum regarding DFAS planning for end-to-end testing in general. On June 8, 1999, the DFAS Director for Information and Technology responded to the issues of roles and responsibilities, Master Plan checklists, interfacing systems, critical crossover dates, data collection and analysis, and the transportation pay event. Initial OIG, DoD, assessments and DFAS comments, as appropriate to the contractor and vendor pay business area, are included in the finding section of this report. Appendix B contains a copy of the memorandum issued by the OIG, DoD, and Appendix C is the DFAS response.

[2]A time machine test strategy involves setting system clocks to the year 2000 and operating under testing conditions. Simulation is a program that allows testers to simulate changing dates rather than actually changing the dates during normal operations.

Objective

The overall audit objective was to evaluate the effectiveness of the planned end-to-end testing in the Defense contractor and vendor pay area. This report addresses plans for conducting Y2K end-to-end testing for Defense contractor and vendor pay. Other reports will address other DFAS critical business processes. See Appendix A for a discussion of the audit scope and methodology, the management control program, and prior audit coverage related to the audit objective.

Contractor and Vendor Pay Y2K End-to-End Test Plans

When initially audited, the event and test plans for the end-to-end testing of the contractor and vendor pay functional processes within the Defense Finance and Accounting Service needed improvement. The plans lacked the following:

- verified assumptions and documented and explained constraints that impact end-to-end test performance,
- requirements for data collection and data analysis, and
- clearly defined test environments, test scenarios, exit criteria, baselines, and roles and responsibilities for the end-to-end test phase.

As a result, the risk that testing would not be consistent and the contractor and vendor pay systems might not continue to function properly after the Y2K crossover had not been sufficiently mitigated. Subsequent actions have addressed those concerns.

DFAS Contractor and Vendor Pay Systems

DFAS pays approximately 1.2 million invoices each month to DoD contractors and vendors for supplies and services. The payment process begins with the initial request for goods or services that require a contract to be initiated. There are several contracting systems within DoD that establish and maintain contracts. Once the contract has been established and the goods and services received, the contractor or vendor sends an invoice to DFAS for payment. The invoice is processed through an "entitlement" system (contractor and vendor pay systems) that authorizes invoices for payment. The information is then sent to the disbursing system for actual payment to the contractor or vendor.

DFAS owns the following three contract and vendor pay systems used for the entitlement process and identified each as a thread for contractor and vendor pay.

- The Computerized Accounts Payable System (CAPS),
- Integrated Accounts Payable System (IAPS), and
- Standard Accounting and Reporting System - One Pay (STARS-OP).

CAPS. CAPS was developed for the Army to automate manual functions in the accounts payable office and process entitlement to make payments to DoD contractors and vendors. The system automatically suspenses

commercial payments and followup letters, allows for payment computation, and produces vouchers and management reports. CAPS will determine payment due date, computer interest penalties, and lost discounts.

IAPS. IAPS was developed for the Air Force to automate accounting and payment functions related to payments for commercial vendors. The IAPS provides automatic payment voucher creation, followup for missing documents, internal reconciliation, and a transaction history to satisfy internal control requirements. The IAPS computes payment due dates, amounts, and discount interest payments.

STARS-OP. STARS was developed for the Navy for general fund accounting, bill paying, and reporting. STARS has been proposed as the interim migratory system on which to consolidate all Department of the Navy general fund accounting, bill paying, and reporting operations. The STARS manages about $750 billion dollars in present and past years' funds for the Navy. STARS-OP is one of the four major subsystems of STARS and processes electronic commerce/electronic data interchange, electronic funds transfer, and bill paying.

In addition to the systems that DFAS owns, it also uses other contractor vendor pay systems owned by other DoD Components to perform its mission. These other systems include the Mechanization of Contract Administration Services and the Standard Automated Materiel Management System; however, these systems were not addressed in the Master Plan, and there is no overall capstone plan for contractor and vendor pay systems.

Contractor and vendor pay systems rely on other functional business processes and systems within DoD, including procurement and logistics. As such, it is critical that the business functions be coordinated to ensure effective and true "end-to-end" testing.

DFAS planning for testing contractor and vendor pay systems occurred from March 16, 1999, through June 30, 1999. Actual tests started on June 28, 1999, and will finish by September 3, 1999. Since testing for the contractor and vendor pay business process did not begin until the end of June 1999, this allowed the event leader and thread leaders time to make adjustments to their respective event and test plans. STARS-OP provided an updated plan dated June 6, 1999, which was more comprehensive than the original April 14, 1999, plan. The CAPS and IAPS thread leaders are still in the process of updating their April 14, 1999, and April 12, 1999, plans respectively.

DoD and DFAS Guidance on Event Plans

Both DoD and DFAS provided guidance for planning end-to-end test events. The DoD Plan, issued in December 1998, states that each functional area should develop an event plan. In the case of contractor and vendor pay, DFAS developed an event plan and a test plan for each thread. Information contained in the event plans was taken from the thread test plans. The DoD Plan details that the event plans should identify the mission-critical systems to be tested,

testing setup, execution, recovery, and expected results. The event plan should also identify the processes addressed by the event and participant resources required. The list of items that should have been included in the Y2K event plans was to ensure conformance across functional areas.

The DFAS Y2K Project Office (the Project Office), as the functional proponent, provided general guidance to event leaders in March 1999, including an outline for the event plans, and requested that initial event plans be prepared in April 1999. During this time, the Project Office was also developing the Master Plan, which detailed the DFAS approach to end-to-end testing. The Master Plan included a DFAS master schedule, assumptions, and constraints along with guidance on data collection and analysis, test environments, exit criteria, and baseline requirements. The event and test plans also needed to conform to the approach established by the Project Office. For contractor and vendor pay, the Project Office permitted the event leader and thread leaders to delay completion of the event and test plans until June 30, 1999.

DFAS End-to-End Test Plans for Contractor and Vendor Pay

DFAS plans for end-to-end testing of the contractor and vendor pay functional process are not fully documented and need improvement to ensure that the Y2K data will be appropriately processed and that payments to contractor and vendors will continue unaffected. Specifically, additional details are needed regarding assumptions and constraints, data collection and analysis, test environments, test scenarios and exit criteria, and roles and responsibilities for those involved in testing.

Assumptions and Constraints. The Master Plan included the following assumptions and constraints applicable to end-to-end testing for all business processes.

- Mission critical systems used in end-to-end tests will have been certified Y2K compliant.
- Third party software (utility) and executive software (operating system) are Y2K compliant.
- Network and computing platforms are certified Year 2000 compliant.

According to Appendix I of the DoD Plan, event planners must obtain the compliance status of participating systems to determine whether to test with the system or the system's contingency plan. Initially, the contractor and vendor pay event and thread leaders did not determine the Y2K compliance of the participating systems. The contractor and vendor pay event and thread planners did not believe it was necessary to obtain a certificate of compliance or any other documentation from participating systems, because DFAS headquarters established the assumption that all systems would be Y2K compliant before the start of end-to-end testing. As stated in versions 2.0, April 29, 1999, through version 2.3, June 21, 1999, of the Master Plan, DFAS will list all systems involved in the Y2K end-to-end test for each thread and state whether or not the

systems are Y2K certified, where the certification resides, and the point of contact for each system. There is no formal list that includes all systems included regardless of owner; however, the thread leaders for contractor and vendor pay have since informally verified that participating systems were Y2K compliant.

In addition to the overall DFAS assumptions and constraints, the contractor and vendor pay thread leaders included assumptions and constraints unique to their business process. For example, the IAPS plan identified interfacing systems that would not be included in the test but did not document the reasons for their exclusion. The event and thread leaders stated that the systems were excluded because they were not critical to the overall process. Without documented rationale for the exclusions, it is difficult to determine whether sufficient testing would occur and that all-critical processes within the thread would be tested. As a result of the audit, the event leader agreed to ensure that the assumptions and constraints for all three threads would be verified, fully documented, and explained.

Data Collection and Analysis. The Master Plan requires that each DFAS organization develop a data collection and analysis strategy that provides enough information to design end-to-end tests; capture test results; and conduct post-testing activities, which include a final analysis, corrective actions, and supporting documentation. In addition, the strategy should be documented in each test plan and should identify the type of data and how it will be collected, personnel and equipment required to support the strategy, and the communications and computer network requirements to support distributed sites. The strategy should link the data collection, archiving, and analysis efforts. DFAS left the decision to determine the strategy for each thread to the thread leader.

On June 4, 1999, the Project Office requested that each event leader ensure that a data analysis and collection plan was developed for each thread and submitted to the Project Office. On June 28, 1999, the IAPS thread submitted a data collection and analysis plan. The STARS-OP Software Test Plan included greater detail on what was to be collected and the analysis to be performed. The CAPS event plan stated that "test documentation would be accomplished in accordance with DFAS 8000.1R, [DFAS Regulation 8000.1-R, "Test and Evaluation," October 15, 1998] paragraph E.C3.AP3.2.1," which is the final test report. This particular DFAS paragraph does not address what information is to be collected or how it is to be collected, but rather how the CAPS thread leader would report the results. As such, the CAPS plan did not include the level of detail required by the Master Plan.

Without data collection and analysis plans, there is no organized or standardized approach between the participating systems, nor any assurance that test goals are met and testing was successful. Additionally, DFAS will increase the risk that the contractor and vendor pay end-to-end tests will not be accurately evaluated. The event leader needs to ensure that detailed data collection and analysis plans are clearly defined prior to testing to comply with the Master Plan.

Test Environments. The Master Plan required that tests be performed in a live (production) environment, if possible, and that a time machine be used where a live environment was not feasible. The Master Plan stated that if time machine testing was not possible, the testing organization would have to resort to simulation and would have to document the reasons for using simulation testing and identify the associated risk. A time machine changes the test environment (hardware and software) to the year 2000 whereas simulation software only changes the dates on software files. In addition, the test plan should state the type of equipment, software, and personnel requirements needed to conduct the tests. The three contractor and vendor pay threads will not be tested in a live or production environment because the system and production data would be subject to a greater risk. However, the event and test plans did not clearly define the test environment and the associated risks. Without an adequately defined and documented test environment, DFAS cannot accurately assess the risks associated with the testing approach for the individual contractor and vendor pay threads. As such, the event and test plans do not provide the assurance that adequate detail is included to properly conduct the end-to-end test.

CAPS. According to the contractor and vendor pay event leader, simulation would be used for the CAPS test, although the CAPS event or test plan did not document the use of simulation. However, the CAPS plan did document where the tests would be conducted and that CAPS functional personnel will replicate live production by manually inputting data and receiving electronic interface inputs. The CAPS plan identifies the equipment requirement and assigned roles and responsibilities for the test team.

IAPS. The contractor and vendor pay event leader stated that time machines will be used for testing purposes; however, the event and test plan did not document this and did not completely identify the test environment to be used. The event plan indicates that IAPS operates on a Unisys mainframe, and the April 8, 1999, software test plan for IAPS stated that the most current operational software would be used but did not specify the version number.

STARS-OP. The June 6, 1999, STARS-OP event plan identified the use of a time machine for the testing and the June 18, 1999, Software Test Descriptions identified the locations and hardware and software requirements. However, the plan could have been improved regarding personnel requirements.

Test Scenarios and Exit Criteria. During the planning phase, the Master Plan requires that each thread specify test scenarios, test data sets, and pass/fail exit criteria for all tests in the event and thread test plans. The three contractor and vendor pay thread plans did not define the test scenarios and exit criteria. According to the event leaders, the plans were not completed at that time because the DFAS headquarters did not require the plans until June 30, 1999. The April 1999 CAPS test plan includes some scenarios to be tested and test scripts; however, the event leader stated that additional scenarios were being developed. The exit criteria were not identified in the CAPS event plan. The IAPS test scenarios and scripts were still being developed as of June 11, 1999, and the exit criteria had not been developed. The June 6, 1999, STARS-OP plan did not identify specific test scenarios and the exit criteria; however, the

STARS-OP Software Test Plan dated June 11, 1999, identified test scenarios but did not clearly define exit criteria. The STARS-OP exit criteria could have been improved to include greater details on the expected results for each test scenario. Without detailed test scenarios and defined exit criteria, DFAS will increase the risk that the contractor and vendor pay end-to-end tests will not be thorough. Additionally, without defined exit criteria, there would be no basis for comparison with the data collected and analyzed during the test.

Baselines. According to the Master Plan, each end-to-end test thread should establish and document a baseline before testing begins. The baseline represents an original set of data that can be used to evaluate the test results and determine whether the test was successful. STARS-OP was the only contractor and vendor pay thread that documented the use of baselines. Specifically, the STARS-OP test plan (as of June 6, 1999) stated that May 1999 production data would be used. The IAPS test plan dated April 8, 1999, does not address a baseline, but the event leader stated that the IAPS test team plans to use May 1999 production data as their baseline data. The CAPS test plan as of April 14, 1999, did not address baselines at all.

Although using the May 1999 production data will provide a baseline for comparison, STARS-OP and IAPS still need to document the inputs and reports required to compare the data. The CAPS thread leader should identify a baseline that was established in the same system configuration as the end-to-end test. This baseline will enable DFAS to ensure that the test results can be compared accurately to determine the success or failure. Therefore, each event leader and thread leader must establish and document a baseline before initiating end-to-end testing.

Roles and Responsibilities. The Master Plan identified four levels of responsibility for end-to-end testing including functional proponents, system managers, event leaders, and thread leaders. The first formally issued Master Plan, version 2.1, May 11, 1999, defines the roles and responsibilities for functional proponents and systems managers but does not provide details concerning roles and responsibilities for the event and thread leaders. This Master Plan was issued after the responsibilities for contractor and vendor pay had been allocated. The Master Plan version 2.3, June 21, 1999, identified and documented the roles and responsibilities for the event and thread leaders.

DFAS headquarters tasked the same person as both the functional proponent and the event leader for the contractor and vendor pay end-to-end test. This dual assignment precludes the separation of duties because one function is overseeing the other. Without the separation of duties, the Project Office must ensure that each DFAS functional proponent satisfies the requirements laid out in the Master Plan.

Management Actions Taken

Guidance to Personnel. In a meeting on May 18, 1999, DFAS stated that revisions to the Master Plan would be posted on a web site. Further, any major

changes to the Master Plan would be forwarded to the event leaders for implementation and further dissemination so that personnel would know about changes in requirements and make necessary adjustments.

Joint Interoperability Test Command Assistance. DFAS has contracted with the Joint Interoperability Test Command to provide assistance to the thread leaders in establishing the tests and to review tests that were previously completed to ensure that they met the requirements of an end-to-end test. During July, the Joint Interoperability Test Command conducted a site visit to Indianapolis to assist the CAPS thread to develop a test approach and the associated test scenarios. This new approach will provide for an integrated test with accounting and disbursing systems. This will provide greater assurance that the critical systems required to make a contractor or vendor payment will operate together in Y2K. A similar visit was made to Cleveland for the STARS-OP and a visit is planned to review the IAPS test approach.

Memoranda To and From DFAS. On May 28, 1999, the OIG, DoD, sent a memorandum to the Director, DFAS Information and Technology, on six issues concerning the DFAS event end-to-end tests plans (see Appendix B). The DFAS Director, Information and Technology responded in a memorandum on June 8, 1999, (see Appendix C). Three of the six issues apply to the contractor and vendor pay thread. The issues are assumptions of Y2K compliance, data collection and analysis, and roles and responsibilities.

Y2K Compliance of Participating Systems. The OIG, DoD, memorandum noted the potential significant impact on testing if systems were not compliant. The memorandum recommended that DFAS functional leaders take the extra step to validate that key interfacing systems are, in fact, compliant. DFAS stated that its system managers were well aware of the status of each of its interfacing partners and that DFAS would continue to track and monitor the status of each interface partner. The thread leaders for the contractor and vendor pay functional area have since informally verified that the interfacing systems are Y2K compliant. The Office of the Secretary of Defense established a Y2K database that came online on May 1, 1999. The database is intended to function as the centralized repository of Y2K management data for DoD. The database maintains information on systems including their Y2K compliance status and availability of system contingency plans. Given this information, contractor and vendor pay event planners should be able to determine the Y2K compliance of all systems, including non-DFAS owned systems, participating in the end-to-end test event and to ensure that only compliant systems will participate. This will reduce the risk of introducing non-compliant data into the test environment.

Data Collection and Analysis. In the OIG, DoD, memorandum, we expressed concern that the DFAS approach for data collection and analysis was not adequate. In response to the memorandum, DFAS agreed and stated that actions are being taken to strengthen this area of the plans. The Project Office further stated that DFAS Regulation 8000.1-R part E, chapter 3, "Test and Evaluation," October 15, 1998, provides guidance concerning data collection

and analysis. The Project Office further stated that each testing agent within DFAS implements the regulation within their own construct, resulting in a non-standard, but successful, data collection and analysis process.

Roles and Responsibilities. In response to the OIG, DoD, memorandum, DFAS acknowledged the need to clarify and augment the roles and responsibilities of the event and thread leaders. These roles and responsibilities were defined in version 2.3 of the Master Plan. DFAS also stated that the Project Office is making site visits and meeting with the testing teams to clarify the roles and responsibilities and updating the Master Plan. The contractor and vendor pay event leader, along with a member of the DFAS Project Office, made site visits to Indianapolis to discuss CAPS, and to Gunter Air Force Station to discuss IAPS, and personnel from the STARS-OP thread met in Arlington, Virginia. At these site visits, the event leader brought all the participants together to discuss the tests. For example, for the IAPS end-to-end test, data are needed and transmitted to the disbursing and accounting functional area. All three parties discussed the approach, and with more communication, the planning phase for contractor vendor pay should improve.

Conclusion

Without adequate planning, DFAS cannot be assured that actual end-to-end tests will adequately test the contractor and vendor pay functional area. To improve the planning process and ensure that the contractors and vendors are promptly and accurately paid, DFAS needed to ensure that assumptions and constraints were validated and explained; consistent data collection and data analysis plans were developed; the testing environment was fully documented; proper baselines were identified and established; test scenarios and exit criteria were developed; and roles and responsibilities were clearly defined and understood.

Recommendation and Management Comments

We recommend that the Director, Defense Finance and Accounting Service ensure that:

1. The event and thread leaders for contractor and vendor pay implement the following:

a. Verify the assumptions and fully explain and document the constraints that impact end-to-end testing.

b. Prepare and document a detailed data collection and analysis plan prior to testing.

c. Document clearly defined test environments and associated risks.

d. Establish and document test scenarios and exit criteria.

e. Document a baseline for the Computerized Accounts Payable System thread prior to testing.

2. The Defense Finance and Accounting Service Year 2000 End-to-End Project Manager create a separation of duties between the functional proponent and event leader or establish alternative measures to ensure compliance with the Defense Finance and Accounting Service Master Plan.

Management comments were responsive. The Defense Finance and Accounting Service, Director for Information and Technology stated that the Joint Interoperability Test Command conducted site assistance visits to all Defense Finance and Accounting Service Centers that have responsibility for defense contractor and vendor pay. The Defense Finance and Accounting Service will ensure that where planning documentation was lacking that followup documentation will include a better record and explanation of the assumptions and constraints and include the data collection and analysis methodology. The Joint Interoperability Test Command assisted in the development and documentation of test environments, test scenarios, and exit criteria. The Computerized Accounts Payable System thread leader has documented a baseline for the end-to-end test. The Defense Finance and Accounting Service Year 2000 End-to-End Project Manager holds periodic in-progress reviews to assess the progress and compliance and the Joint Interoperability Test Command also conducts site visits on a routine basis to ensure progress and compliance. See the Management Comments section for the text of the comments.

Appendix A. Audit Process

This report is one in a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the DoD Chief Information Officer to monitor DFAS efforts to address the Y2K computing challenge. For a listing of audit projects addressing the issue, see the Y2K web page at http://www.ignet.gov.

Scope

We reviewed Y2K reporting requirements and policies issued by the Office of the Secretary of Defense and the DFAS. We reviewed the Master Plan and thread event and test plans and held discussions with DFAS managers to obtain additional information and clarification on roles and responsibilities of its Y2K managers.

DoD-Wide Corporate Level Government Performance and Results Act Goals. In response to the Government Performance Results Act, the Department of Defense has established 6 DoD-wide corporate level performance objectives and 14 goals for meeting these objectives. This report pertains to achievement of the following objectives and goals.

> **Objective:** Prepare now for an uncertain future. **Goal:** Pursue a focused modernization effort that maintains U.S. qualitative superiority in key warfighting capabilities. **(DoD-3)**

DoD Functional Area Reform Goals. Most major DoD functional areas have also established performance improvement reform objectives and goals. This report pertains to achievement of the following functional area objectives and goals.

- **Information Technology Management Functional Area. Objective:** Become a mission partner. **Goal:** Serve mission information users as customers. **(Information Technology Management-1.2)**

- **Information Technology Management Functional Area. Objective:** Provide services that satisfy customer information needs. **Goal:** Modernize and integrate Defense information infrastructure. **(Information Technology Management-2.2)**

- **Information Technology Management Functional Area. Objective:** Provide services that satisfy customer information needs. **Goals:** Upgrade technology base. **(Information Technology Management-2.3)**

General Accounting Office High-Risk Area. The General Accounting Office has identified several high-risk areas in the DoD. This report provides coverage of the Information Management and Technology high-risk area.

Methodology

Audit Type, Dates, and Standards. We performed this program audit from April 1999 through July 1999, in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. We used nonstatistical sampling methods, and did not use computer-processed data for this audit.

Use of Computer-Processed Data. We did not use computer-processed data to perform this audit.

Use of Technical Assistance. We met with technical experts in the OIG, DoD, Audit Followup and Technical Support Directorate to obtain assistance with reviewing the sufficiency of event plans.

Contacts During the Audit. We visited or contacted individuals and organizations within DoD. Further details are available upon request.

Management Control Program. We did not review the management control program related to the overall audit objective because DoD recognized the Y2K issue as a material management control weakness area in the FY 1998 Annual Statement of Assurance.

Summary of Prior Coverage

The General Accounting Office and the Inspector General, DoD, have conducted multiple reviews related to Y2K issues. General Accounting Office reports can be accessed over the Internet at http://www.gao.gov/. Inspector General, DoD, reports can be accessed at http://www.dodig.osd.mil/.

Appendix B. OIG, DoD, Memorandum to DFAS on Y2K End-to-End Test Planning

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202-2884

MAY 28 1999

MEMORANDUM FOR DIRECTOR FOR INFORMATION AND TECHNOLOGY,
DEFENSE FINANCE AND ACCOUNTING SERVICE

SUBJECT: Status of Audits of Finance Functional Area Year 2000 End-to-End Tests

In April 1999, we initiated the following audit projects to evaluate the effectiveness of Y2K end-to-end testing by the Defense Finance and Accounting Services (DFAS) The projects were aligned by functional area in accordance with the functional break-out identified by DFAS

Civilian Pay	Project 9FG-9025
Military/Retiree/Annuitant Pay	Project 9FG-9026
Vendor/Contractor Pay	Project 9FG-9027
Transportation Pay	Project 9FG-9028
Disbursing	Project 9FG-9029
Accounting	Project 9FG-9030
Travel Pay	Project 9FG-9031

Our review, to date, has focused on analyzing the adequacy of test plans for the seven areas We evaluated the adequacy of the DFAS Y2K test plans using requirements contained in the DoD Y2K Management Plan, Version 2 1, Appendix I; the DFAS Y2K Management Plan, Version 1 0; the DFAS Y2K End-to-End Master Plan, Version 2.1; the DFAS Regulation 8000.1-R, "Information Management and Instruction Guidance," Version 5 0; and the GAO Operational Evaluation Assessment Tool We anticipate future audits will assess test results and contingency planning efforts by DFAS.

Because of the urgency of Year 2000 efforts, our intent is to communicate potential areas of concern as quickly as possible so that management may address these issues in a timely manner. The attachment to this memorandum reports the initial results of our review. During our preliminary review, we identified concerns regarding the adequacy of DFAS planning efforts for functional end-to-end testing. If these concerns are not addressed, there is increased risk that DFAS end-to-end testing may not detect a significant Y2K problem. We may include these and any additional issues in a draft report at a later date. We request that you provide a response to this memorandum by June 8,1999. If there are any questions, please contact Ms. Kimberley Caprio, Program Director at (703) 604-9139 or DSN 664-9139.

F. Jay Lane
Director
Finance and Accounting Directorate

DFAS has made significant progress in addressing testing requirements for its functional areas including the issuance of a Master Plan, identification of levels of responsibility, and checklists for test planning purposes During our review, we identified the following concerns that should be addressed by DFAS. On May 27, 1999, we met with DFAS officials to discuss the concerns and actions to be taken.

1. **Roles and Responsibilities.** The DFAS Master Plan identified four levels of responsibility for end to end testing including Headquarters functional proponents, systems managers, event leaders, and thread leaders. The Plan defined roles and responsibilities for functional proponents and systems managers, but did not provide details on the responsibilities for either the event or thread leaders. During the May 27, 1999 meeting, DFAS Headquarters personnel, acknowledged the need for oversight and agreed to provide the details immediately.

In addition, the Master Plan was not issued until May 11, 1999, and in some cases had not arrived at the event leader level until May 18, 1999. However, functional event plans and allocation of responsibilities was already occurring. As a result, the individuals delegated the responsibilities may not have been appropriate. For example, for the Travel pay event, the same person was tasked as both the functional proponent and the event leader. As a result, it precludes the separation of duties by allowing one function to oversee the other function To ensure that the 4 levels of responsibility are appropriately staffed, the DFAS Headquarters Project Office should review the assigned personnel and ensure that they are aware and understand their delegated responsibilities.

2. **Master Plan Checklists.** The DFAS Y2K Master Plan included four checklists to be used by DFAS Headquarters personnel, the functional area proponent, the event leader, and the tester. These checklists require DFAS personnel to assess the effectiveness of the end-to-end testing program at each designated level including such items as assessing the adequacy of testing staff, funds, and interface agreements The DFAS Master Plan stated that these checklists would "provide independent auditors with evidence of compliance with the end-to-end test requirements," however, the Master Plan did not make completion of the checklists mandatory.

We believe the checklists should be mandatory and maintained at the functional level along with test results. The 2 to 3 page checklists provide an excellent means to ensure and document that essential steps were taken prior to performing end to end testing of DFAS functional areas. Completion of the planning section of these checklists provides a tool to help ensure compliance with the Master Plan requirements and allow for early corrections of deviations or omissions from the plan. Further, use of the checklist affords standardization of the process used throughout DFAS for end to end test planning efforts. Without the use of the checklists, DFAS lacks assurance that the testing was complete, adequate, and consistent. We also believe that a

Attachment
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signature block or notation should be included in the checklists to establish accountability for the responses and to facilitate quick actions should a problem arise later.

3. Interfacing Systems. DFAS relies heavily on interfacing systems to provide the majority of data included in DFAS systems As such, coordination and compatibility of data exchanged with interfacing systems is critical to ensuring successful Y2K end to end tests. If data from a non-compliant system feeds into a DFAS system, the potential exists for the DFAS system to not be able to function properly after Y2K. The level of assurance being obtained by DFAS functional area officials regarding Y2K compliance of interfacing systems varies from exchanging documentation to merely assuming that interfacing systems are compliant or relying on verbal responses

Given the significant potential impact of interfaces on successful testing, we believe that DFAS functional leaders should take the extra step to validate that key interfacing systems are, in fact, compliant Information on the compliance of each DoD mission critical system should be available in the OSD database. As such, DFAS personnel for the functional areas should be able to access the database and validate that those applicable interfacing partners are clearly designated as Y2K compliant before entering the end-to-end test. We discussed this matter with DFAS Headquarters officials who agreed that, while they are only testing with compliant interfacing partners, it is reasonable that DFAS review the database to ensure that interfacing partners are compliant prior to testing.

4. Critical Crossover Dates. The DFAS Master Plan identified 5 critical cross-over dates as mandatory for inclusion during end-to-end tests. The dates are consistent with the 5 dates recommended by the Assistant Secretary Defense (Command, Control, Communications, and Intelligence) The dates are fiscal year 2000, calendar year 2000, leap year crossing (February 29, 2000), fiscal year 2001, and calendar year 2001 Developers of DFAS test plans have not planned to test all 5 dates. For example, the Marine Corp Total Force System is only testing the leap year 2000 crossover The Computerized Accounts Payable System is not testing the fiscal year and the calendar year 2001 crossovers. The reduced number of dates being tested is a result of:

- The test plans being developed prior to the issuance of the DFAS Master Plan on May 11, 1999,
- Personnel pay systems, for example, not being impacted by fiscal year changes,
- Funding being allocated based on test plans developed prior to the Master Plan.

In order to ensure compatibility of interfacing systems, it is important that the same dates are tested, particularly where DFAS systems feed data to other systems. For example, data from systems within the Travel Pay test event feed into systems within the Disbursing test event. Further, once processed within disbursing, data is fed to both

accounting and back to travel systems. Incoming files to the Automated Disbursing System (ADS) (part of the Disbursing test event) plan to test all dates specified in the DFAS Y2K Master Plan. However, the Travel Pay test event does not plan to test the fiscal year 2000 to 2001 crossover. As a result, the potential exists that data relying on the fiscal year 2000 to 2001 crossover may not function properly. Meanwhile, DFAS may report a successful test based on the less than 5 dates being tested.

It is important that interfacing systems select test dates in a similar manner to ensure Y2K data flows through each system appropriately. DFAS functional leaders should ensure that critical crossover dates for each of the seven functional areas are compatible prior to testing.

5. **Data Collection and Analysis.** The DoD Y2K Management Plan states that Y2K event output products such as plans and procedures should specify in detail what data needs to be collected, who will analyze the data, and how it will be analyzed. Essentially, the requirement is to define expected test results Consistent with the DoD Plan, the DFAS Master Plan requires, as exit criteria to the test planning phase, that responsible parties specify pass/fail criteria for all tests, that data collection procedures are in place, and mechanisms needed to capture data are installed. The DFAS Master Plan, however, does not specify:

- What types of data should be collected to ensure consistency in reporting test results.
- A methodology for each DFAS organization to document the data collection process in the appropriate Event Plan

For the 7 DFAS functional events, data collection and data analysis plans are either nonexistent or do not ensure the tests will be judged objectively. For example, the Defense Industrial Financial Management System (DIFMS) Test Plan, which is part of the Accounting Test Event, plans to review reports, queried data, and DIFMS screens to accomplish data analysis, but did not establish expected test results criteria or a baseline that could be used to determine the adequacy or accuracy of the reports, queries, and screens As another example, the Civilian Pay Event lacks either a data collection plan or a data analysis plan. Instead, the Event Leader indicated that years of prior testing and DCPS experience will identify discrepancies should they arise.

Both DoD and DFAS require the establishment of a structured approach to testing including identifying expected outcomes, test participants, and other details. Without such plans, there is no organized or standardized approach between the participating systems, nor any assurance that test goals are met and tests were successful. Given the nature of end-to-end testing, with its large numbers of participating or "partner" systems, it is prudent to ensure that the data collection is as consistent as possible for each event, and that the analysis of the test data is objective. Without the definition of data collection and data analysis plans before testing begins, this will be difficult.

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3 of 4

DFAS Functional Test Leaders need to ensure that detailed test collection, results, and analysis requirements are clearly defined prior to testing

6. **Transportation Pay Event.** DFAS identified Transportation Pay as one of the 7 functional areas for testing purposes However, DFAS has not yet developed an end-to-end test plan for the event There are two systems involved in transportation, the Defense Transportation Pay System (DTRS) and the Military Traffic Management Command – Financial Management System (MTMC-FMS). The Transportation Pay Event Leader stated that MTMC-FMS testing during Y2K conversion process accomplished the end-to-end requirements of the Master Plan. DFAS has subsequently contracted with the Joint Interoperability Testing Command (JITC) to independently verify and validate the prior testing We plan to follow-up on this functional area

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Appendix C. DFAS Memorandum on Y2K End-to-End Test Planning

DEFENSE FINANCE AND ACCOUNTING SERVICE
1931 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22240-5291

JUN 8 1999

DFAS-HQ/S

MEMORANDUM FOR DIRECTOR, FINANCE AND ACCOUNTING DIRECTORATE
OFFICE OF THE INSPECTOR GENERAL, DEPARTMENT OF DEFENSE

SUBJECT: Status of Audits of Financial Functional Area Year 2000 End-to-End Tests

The attached outlines Defense Finance and Accounting Service (DFAS) response to the DoD Inspector General's (IG) initial review of and concerns about DFAS' End-to-End Test (E2E) Plans. DFAS recognizes that a great deal of work is still to be done to ensure all necessary requirements for E2E are accomplished. To meet this goal, DFAS has conducted meetings with event and thread leaders to review all E2E guidelines and requirements.

All concerns addressed in the DoD IG's memo are being addressed.

Roles and Responsibilities: Concur. Action to expand event and thread leader roles will be accomplished by June 25, 1999.

Master Plan Checklist: Non-concur. DFAS will not mandate the checklist.

Interfacing Systems: Concur. This action is considered completed, but with periodic updates.

Critical Crossover Dates: Concur. This action is completed.

Data Collection and Analysis: Concur. This is an ongoing action with no specific target date.

Transportation Pay Event: Concur. This is an ongoing action with a target completion date of June 30, 1999.

C. Vance Kauzlarich
Director for Information and Technology

Attachment:
As Stated

Roles and Responsibilities. Concur. DFAS acknowledges that testing and planning activities were occurring prior to the issuance of the Master Plan on 6 May. However, several coordination meetings had already occurred and guidance on developing Event Plans was issued on 31 March. DFAS also acknowledges the need to clarify and augment the roles and responsibilities of the event and thread leaders in the DFAS E2E Master Plan. We are currently making site visits and meeting with the testing teams to clarify roles and responsibilities and are updating the Master plan as well. It should be noted there may be an overlap in the area of responsibility, due to the fact that the internal DFAS support structure for each business process/application has a great bearing upon the specific breakout of roles and responsibilities. DFAS does not view this as a conflict or an inappropriate assignment of duties.

Master Plan Checklist. Non-concur. DFAS designed and issued these checklists as tools to assist DFAS personnel responsible for planning, tracking, and conducting end to end testing. Because each business area/application has a normal testing practice already established, DFAS did not make the checklists mandatory, and would prefer to keep the use of checklists optional. However, DFAS will encourage the use of the checklists whenever possible.

Interfacing Systems. Concur. DFAS agrees that coordination and compatibility of data exchange between DFAS systems and their interface partners is essential to a successful Y2K effort. DFAS has pursued this goal for the past two years. DFAS has established Interface Agreements with all of its interface partners. This effort generated in excess of 1400 agreements. In addition, DFAS has tracked and updated on a monthly basis the status of testing and compliance of each of its interface partners. DFAS system mangers are well aware of the status of each of its partners. DFAS will continue to track and monitor the status of its interface partners mission critical and other.

Critical Crossover Dates. Concur. DFAS acknowledges the importance of testing as many dates as possible, and the coordination of these dates among partners. All DFAS managers have been encouraged to coordinate this initiative with all pertinent parties. It must be understood that dates do not necessarily play an important part in the relationship of one system to another. The DFAS E2E Master Plan has recently been updated to empower the Functional

Managers with determining which dates are critical for testing within their specific business process. We have also hired JITC to independently validate and verify our planning efforts.

Data Collection and Analysis. Concur. DFAS agrees that current plans lack specific exit criteria and we are taking action to strengthen this area of our plans. DFAS 8000.1-R, Part E, Chapter 3, Test and Evaluation provides guidance concerning data collection and analysis. Our central design activities normally plan and execute their tests, using this guidance, precluding the need for specific guidance to be issued relative to E2E testing.

Each testing agent within DFAS implements the regulation within their own construct, resulting in a non-standard, but successful, data collection and analysis process. Because Y2K E2E testing requirements are not system centric, but business process centric, we have hired JITC to independently validate and verify our E2E planning and testing efforts. The JITC analysis/evaluation will document specific risks associated with data collection and analysis procedures, in sufficient time for us to take corrective action.

Another measure of risk mitigation is to conduct site visits, where we meet with all thread participants. During these meetings we are emphasizing the need for adequate documentation of their data collection and analysis procedures, as well as documenting version control and configuration management procedures.

Transportation Pay Event. Concur. In addition to the Transportation Pay System, DFAS has identified several other systems, which claim completion of the end to end testing initiative. JITC will be used to verify that these systems indeed have met E2E requirements. If any system fails to pass the validation of JITC, steps will be initiated to complete all or any portion of the E2E process that needs to be completed.

Appendix D. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition and Technology
  Director, Defense Logistics Studies Information Exchange
Under Secretary of Defense (Comptroller)
  Deputy Chief Financial Officer
  Deputy Comptroller (Program/Budget)
Assistant Secretary of Defense (Command, Control, Communications, and Intelligence)
  Deputy Chief Information Officer and Deputy Assistant Secretary of Defense (Chief Information Officer Policy and Implementation)
    Principal Director for Year 2000

Department of the Army

Inspector General, Department of the Army
Auditor General, Department of the Army

Department of the Navy

Assistant Secretary of the Navy (Financial Management and Comptroller)
Inspector General, Department of the Navy
Auditor General, Department of the Navy
Inspector General, Marine Corps

Department of the Air Force

Assistant Secretary of the Air Force (Financial Management and Comptroller)
Inspector General, Department of the Air Force
Auditor General, Department of the Air Force

Other Defense Organizations

Director, Defense Contract Audit Agency
Director, Defense Finance and Accounting Service
Director, Defense Information Systems Agency
  Inspector General, Defense Information Systems Agency
  United Kingdom Liaison Officer, Defense Information Systems Agency
Director, Defense Logistics Agency
Director, National Security Agency
  Inspector General, National Security Agency
Inspector General, Defense Intelligence Agency
Defense Systems Management College

Non-Defense Federal Organizations

Office of Management and Budget
  Office of Information and Regulatory Affairs
General Accounting Office
  National Security and International Affairs Division
    Technical Information Center
  Director, Defense Information and Financial Management Systems, Accounting and Information Management Division, General Accounting Office

Congressional Committees and Subcommittees, Chairman and Ranking Minority Member

Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
Senate Special Committee on the Year 2000 Technology Problem
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Reform
House Subcommittee on Government Management, Information, and Technology, Committee on Government Reform
House Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform
House Subcommittee on Technology, Committee on Science

Defense Finance and Accounting Service Comments

DEFENSE FINANCE AND ACCOUNTING SERVICE
1931 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22240-5291

AUG 20 1999

DFAS-HQ/S

MEMORANDUM FOR DIRECTOR, FINANCE AND ACCOUNTING DIRECTORATE
OFFICE OF THE INSPECTOR GENERAL, DEPARTMENT OF DEFENSE

SUBJECT: Audit Report on Defense Contractor and Vendor Pay Year 2000 End-to-End Testing (Project No. 9FG-9027)

The attached outlines the Defense Finance and Accounting Service (DFAS) response to the DoD Inspector General's (IG) report on Defense Contractor and Vendor Pay Year 2000 End-to-End test planning.

The recommendations in your report are being implemented as outlined in the attached response. In June DFAS dispatched the Joint Interoperability Test Command (JITC) to conduct site assistance visits to all DFAS Centers that have a responsibility for defense Contractor and Vendor Pay. JITC developed integrated test scenarios to test a critical thread within the vendor pay business area at each Center. The test scenarios integrate the disbursing and accounting business area threads into the contractor and vendor pay thread tests. Where planning documentation is lacking in specificity, DFAS will ensure that procedural documentation reflects the data baseline, test environment, data collection method, and the exit criteria.. JITC has or will assist each Center with developing the procedural documentation. The final test analysis reports will reflect the analysis and final results of the testing.

for C. Vance Kauzlarich
Director for Information and Technology

Attachment:
As stated

1. **The event and thread leaders for contractor and vendor pay implement the following:**

a. **Verify the assumptions and fully explain and document the constraints that impact end-to-end testing.**

Concur. The vendor pay thread leaders will better record and explain the assumptions and constraints that impact their end-to-end testing in the supporting documentation.

b. **Prepare and document a detailed data collection and analysis plan prior to testing.**

Concur. The vendor pay thread leaders have or will document their data collection and analysis. The IAPS thread leader has completed a specific data collection and analysis plan. The STARS-OP thread leader has detailed the data collection and analysis of their end-to-end testing in the STARS Software Test Plan, which includes the Contractor and Vendor Pay module, STARS-One Pay. The CAPS thread leader is documenting the data collection and analysis as part of the procedural documentation.

c. **Document clearly defined test environments and associated risks.**

Concur. The vendor pay thread leaders have documented clearly defined test environments and associated risks. DFAS contracted with the Joint Interoperability Test Command (JITC) to assist with the development and documentation of test environments. With the help of JITC, the vendor pay thread leaders have documented test environments that fully meet the requirements of end-to-end testing.

ACTION COMPLETE

d. **Establish and document test scenarios and exit criteria.**

Concur. The vendor pay thread leaders have established and documented test scenarios and exit criteria for the end-to-end tests. Once again, JITC assisted with the establishment and documentation of test scenarios and exit criteria for vendor pay through interview and observation. JITC used flowcharts and worksheets to completely explain the vendor pay end-to-end test scenarios and exit criteria.

ACTION COMPLETE

e. Document a baseline for the Computerized Accounts Payable System thread prior to testing.

Concur. The CAPS thread leader now has a documented baseline to ensure the end-to-end test results can be compared accurately to determine success or failure. The CAPS thread leader is using test data for the end-to-end tests, not live data. The source of the test data or the "baseline" for CAPS is contract information from SAACONS. The CAPS thread leader is passing the test data to CAPS and then entering five different Year 2000 dates for 21 vouchers. Then, the CAPS thread leader will compare what information the system passes with the actual data on the vouchers. Basically, the CAPS thread leader will determine whether the critical payment information processed through the system, such as dollar amounts, is the same no matter what date (Y2K or any other) is used.

2. The Defense Finance and Accounting Service Y2K End-to-End Project Manager create a separation of duties between the functional proponent and event leader or establish alternative measures to ensure compliance with the Defense Finance and Accounting Service Master Plan.

Concur. DFAS has established alternative measures to ensure compliance with the Defense Finance and Accounting Service Master Plan. Periodic in-progress-reviews are conducted with the Year 2000 End-to-End Test Project Manager to assess progress and compliance. Additionally, the Joint Interoperability Test Command is visiting each DFAS Center on a routine basis to continue our efforts to ensure compliance and progress. JITC has developed integrated test scenarios and work sheets that document the thread to be tested and the data collection methodology. JITC is currently assisting with development of procedural documentation, or is on site to witness testing efforts and provide technical advice and consult where necessary for all Year 2000 End-to-End testing efforts in DFAS.

ACTION COMPLETE

Audit Team Members

The Accounting and Finance Directorate, Office of the Assistant Inspector General for Auditing, DoD, prepared this report.

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